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ASBESTOS AWARENESS

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What is Asbestos?

Asbestos ore

Asbestos fibers

- A naturally occurring mineral
  - Consisting of magnesium-silicates
- A Crystalline structure of a fibrous nature
  - Disturbance causes progressively smaller fibers

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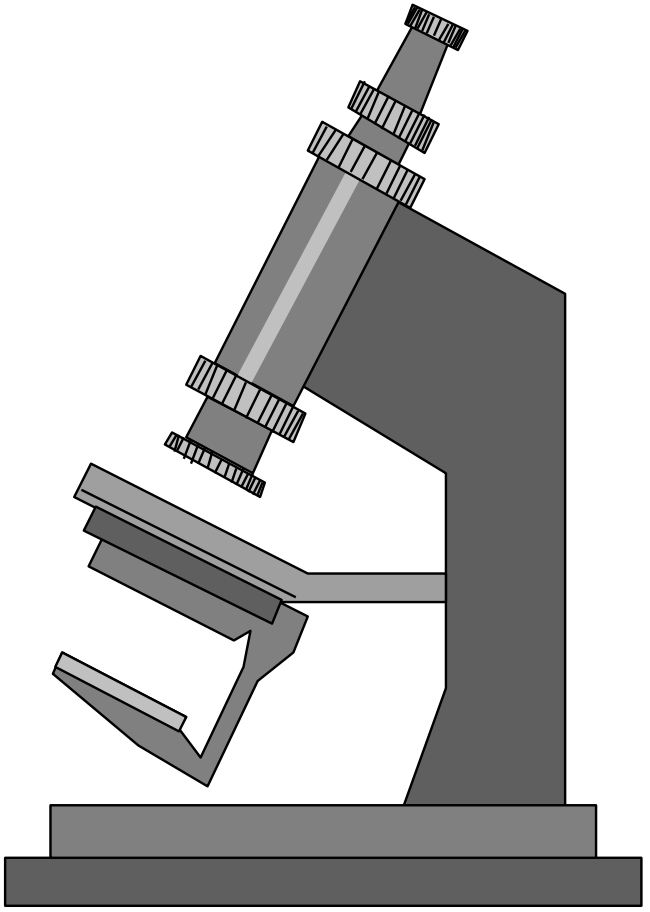
Problems with Asbestos

- Microscopic fibers



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Asbestos Groups

- A total of six varieties
  - Serpentine
    - Chrysotile - White asbestos
  - Amphibole
    - Amosite – Brown asbestos
    - Crocidolite – Blue asbestos

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Chrysolite – White Asbestos

- Accounts for 95% of asbestos in products.
- Fine, wavy, silky fibers
- It is magnesium silicate.

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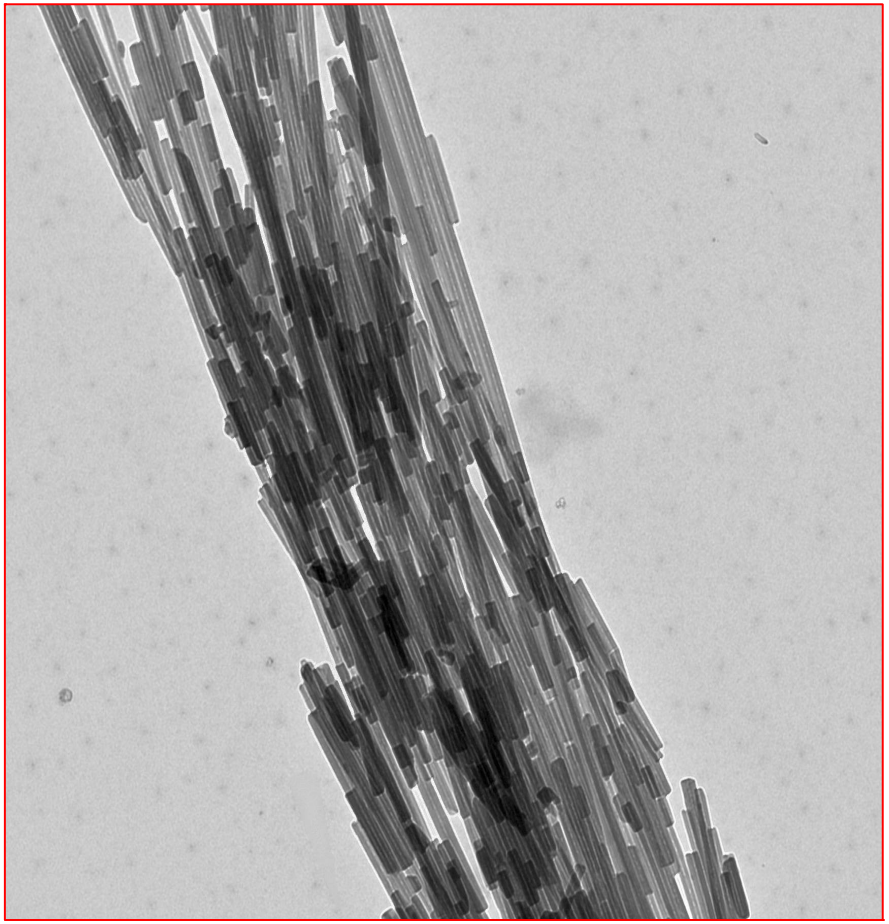
Amosite – Brown Asbestos



- Brown or grey straight fibres
- Contains iron and magnesium
- Most often used asbestos in this group

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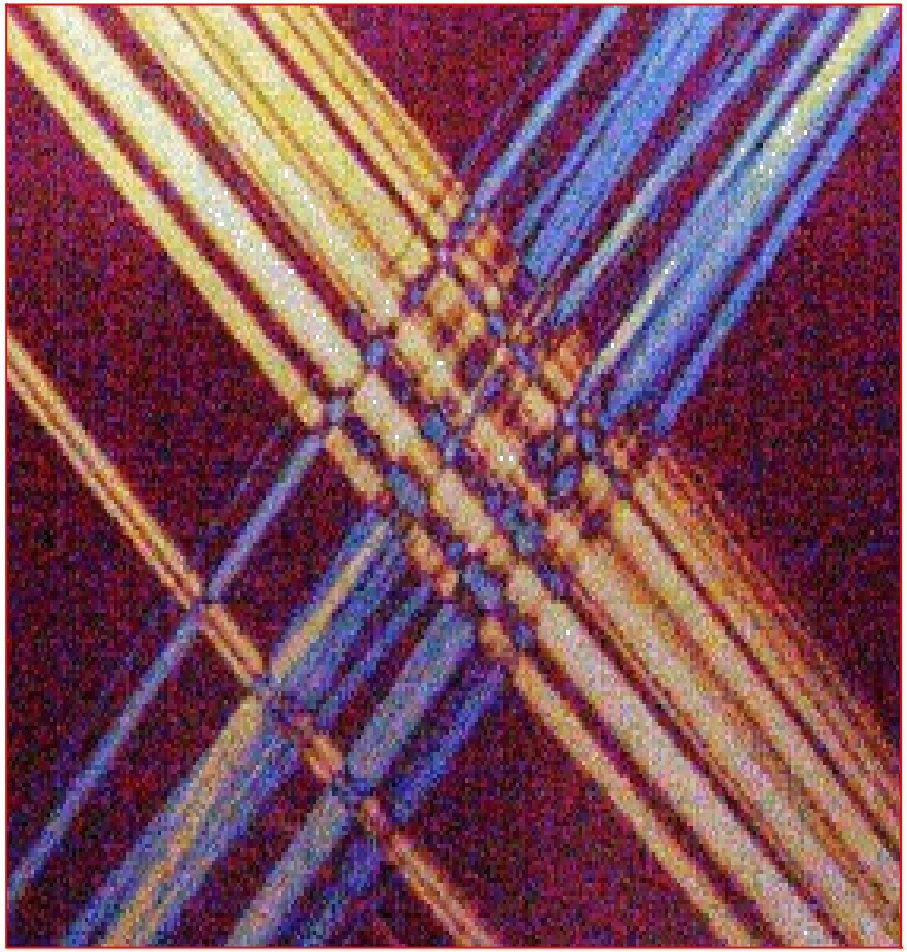
Crocidolite – Blue Asbestos



- Takes the form of blue straight fibres.
- It is a sodium iron magnesium silicate.

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Properties

- Bacteriologically resistant,
- Chemically resistant,
- Electrical insulator,
- Good flexibility,
- Good noise absorption,
- Thermal insulator,

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Properties

- Good mechanical strength,
- High tensile strength,
- Good moisture absorption,
- Friction and wear characteristics,
- Incombustibility

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"ACM" and "PACM"

Asbestos Containing Material

Any material containing more than 1% asbestos by weight.

Presumed Asbestos Containing Material

Installed prior to 1981

- Surfacing materials
- Thermal System Insulation
- Flooring

Must be handled as ACM unless proved otherwise

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Three Categories of ACBM

- Surfacing materials
  - spray
  - trowel
- Thermal System Insulation (TSI)
- Miscellaneous

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Surfacing

- Fireproofing
- Acoustical texture
- Decorative texture
- Plasters

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Thermal System Insulation

- Pre-formed pipe insulation
- “Mud” type mixes for fittings
- Mastics
- Aircell
- Duct insulation

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Miscellaneous

- Floor tiles and sheet vinyls
- Fabrics
- Cement products
- Brake / clutch linings
- Felt paper products
- Various consumer products

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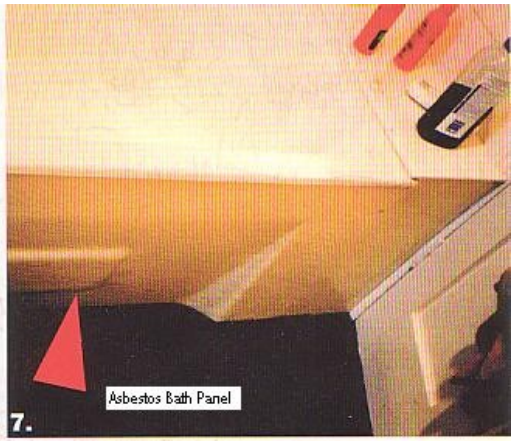
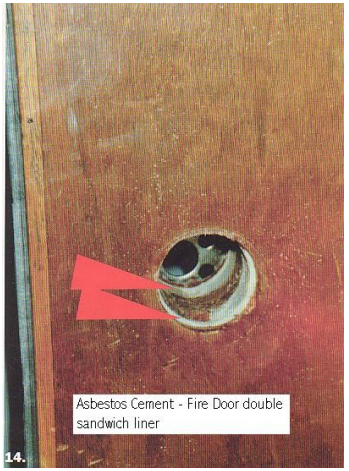
Asbestos Products



Bath Panel



Fire Door

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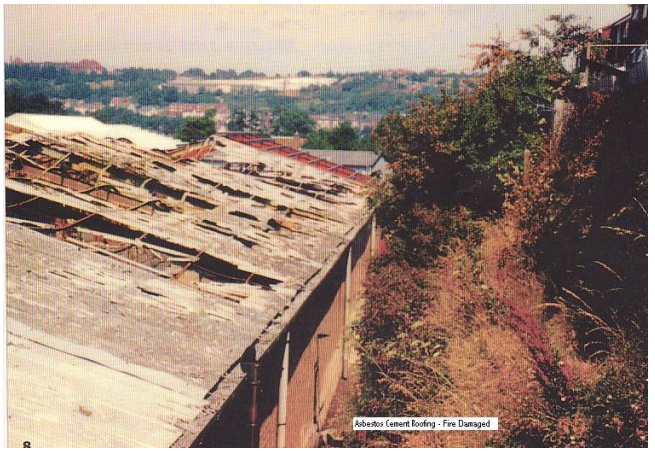
Asbestos Products

Asbestos “CAB” siding



Corrugated Roofing

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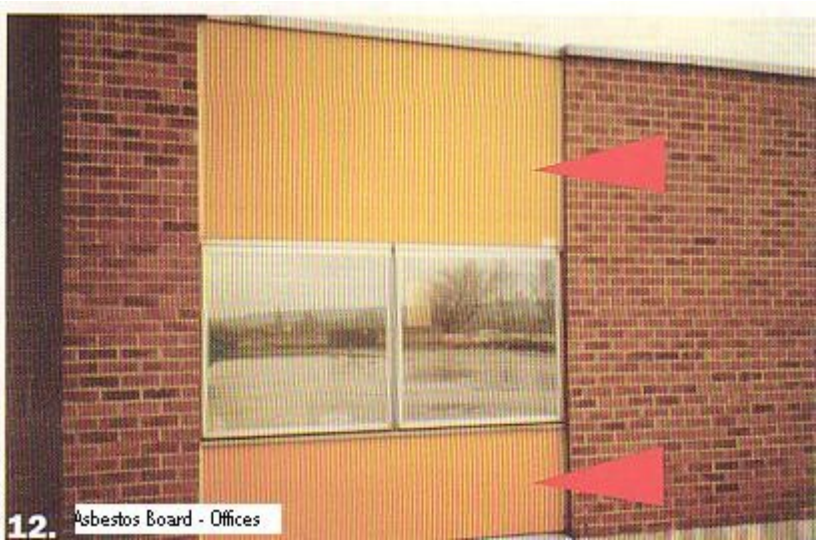
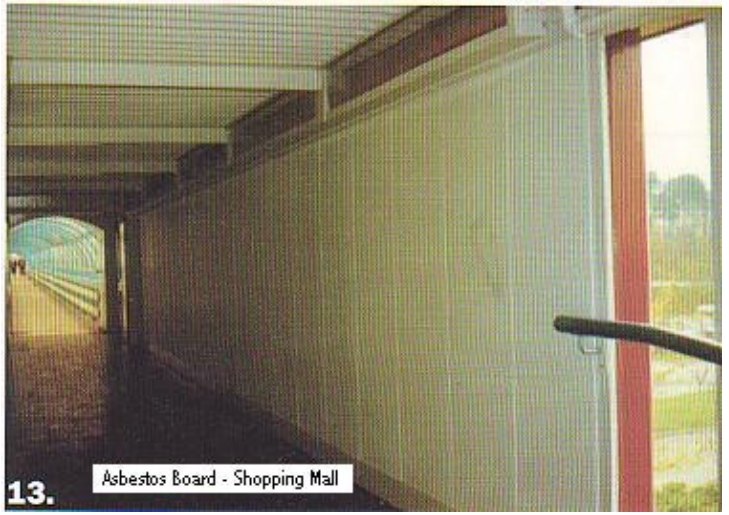
Asbestos Products





Seen in Offices and in Shopping Malls

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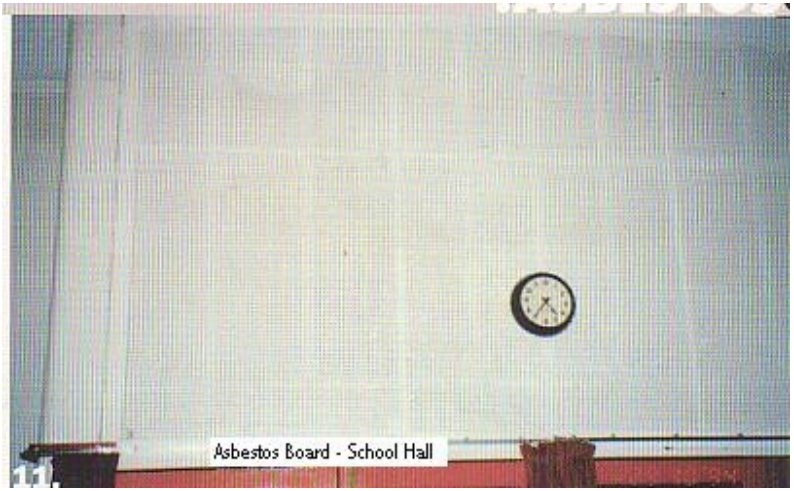
Asbestos Products

Damage caused by cable



Acoustic Panel - School Hall

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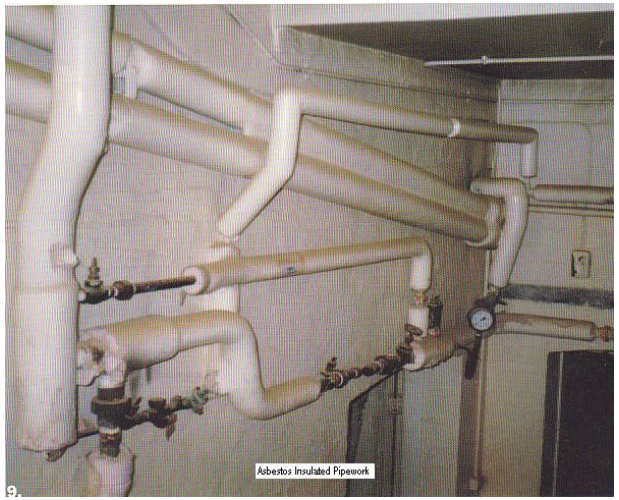
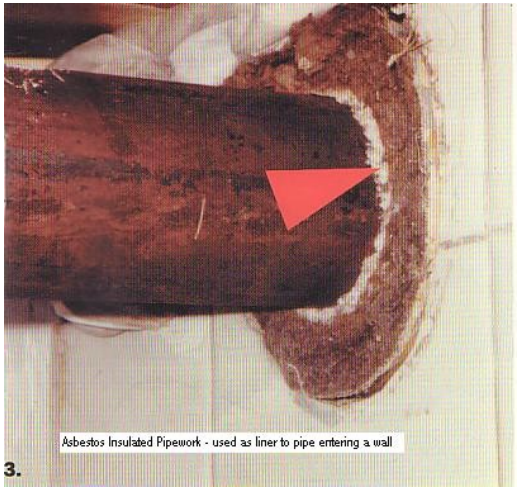
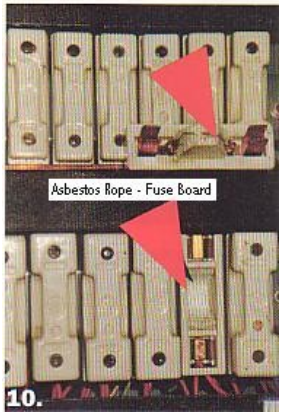
Asbestos Products







Pipe Lagging, Gaskets and

Woven Asbestos

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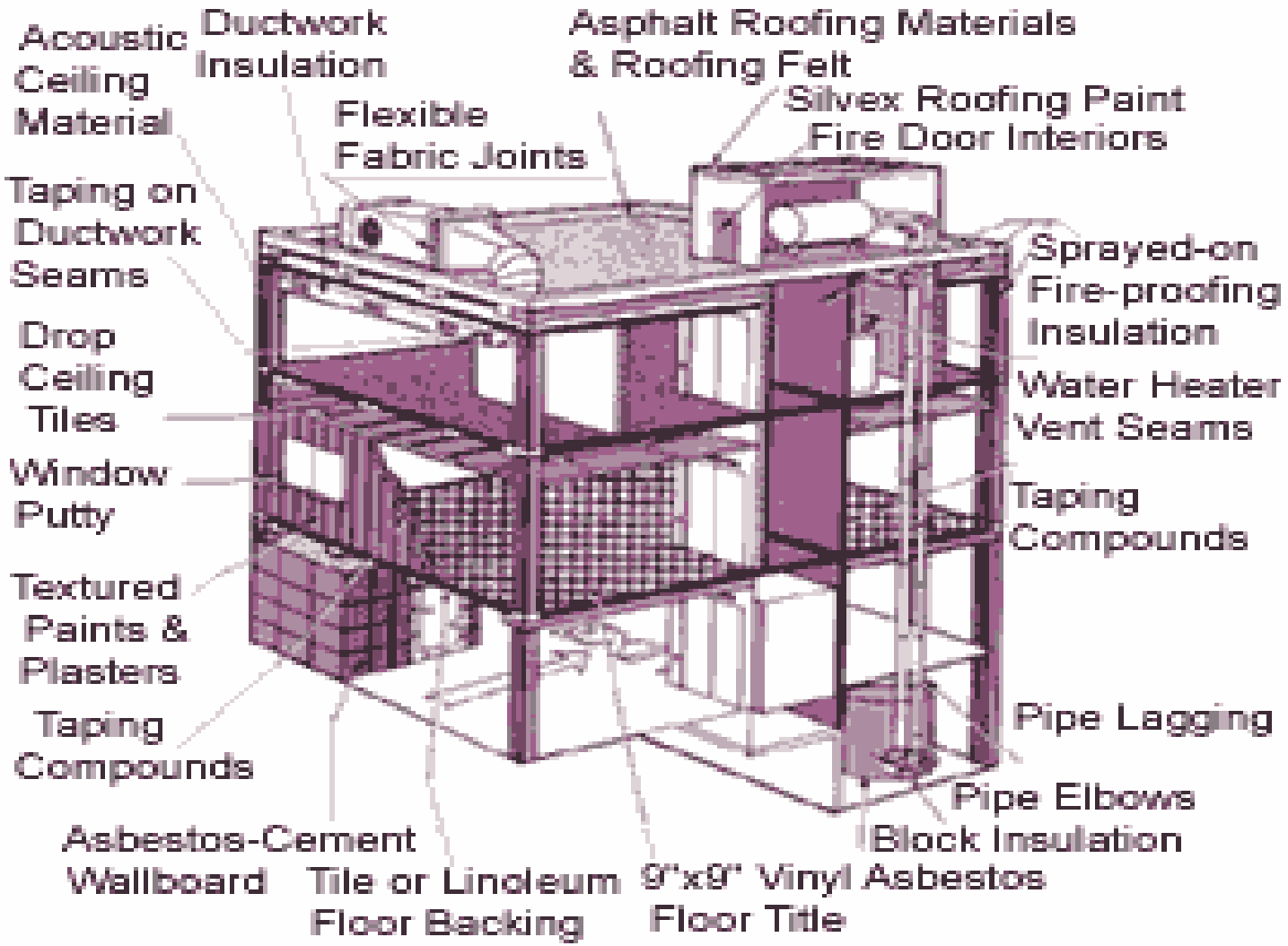

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Asbestos Containing Building Material

- Acoustical Plaster
- Asphalt Floor Tile
- Blown-In Insulation
- Boiler Insulation
- Boiler Breeching Insulation
- Caulking and Putties
- Cement Wallboard
- Cement Pipes
- Cement Siding
- Chalk Boards
- Cooling Tower Components
- Roof Shingles
- Decorative Plasters
- Spackling Compounds

Fire Doors

Base Flashing

Heat/AC Duct Insulation

Vibration Isolators

High Temp Gaskets

Joint Compounds

Lab Hoods/Table Tops

Lab Gloves

Pipe Insulation

Roofing Felt and Flashing

Adhesives and Mastics

Floor Backing

Fire Curtains

Fireproofing materials

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Asbestos Containing Building Material

- Electrical Panel Partitions
- Textured Paint/Coatings
- Electrical Cloth Wrap
- Thermal Paper
- Electrical Wiring Insulation
- Vinyl Floor Tile
- Elevator Brake Shoes
- Vinyl Sheet Flooring
- Elevator Equipment Panels
- Wallboard and Drywall
- Fire Blankets
- Wicks

Vinyl flooring

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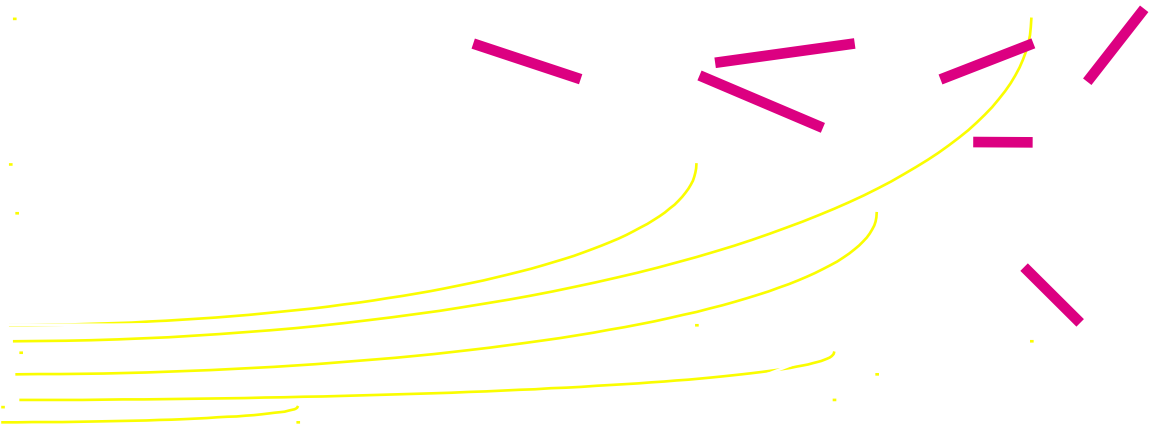
Health Effects

- When is asbestos a danger?
  - When the fibers become airborne.



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Health Effects

- What releases asbestos fibers?
  - Friable materials- can be crumbled, pulverized, or reduced to powder by hand pressure when dry
    - Sprayed on asbestos insulation
  - Damaging asbestos containing materials or friable materials

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Defense Systems

- Nasal hair
  - Traps larger particles of dust, etc.
- Cough reflex
  - Body's clearing response to irritants
- Mucous lining
  - Particle trapped in linning
- Cilia
  - Carries foreign particles out of the lungs
- White blood cells
  - Encapsulate the asbestos fiber

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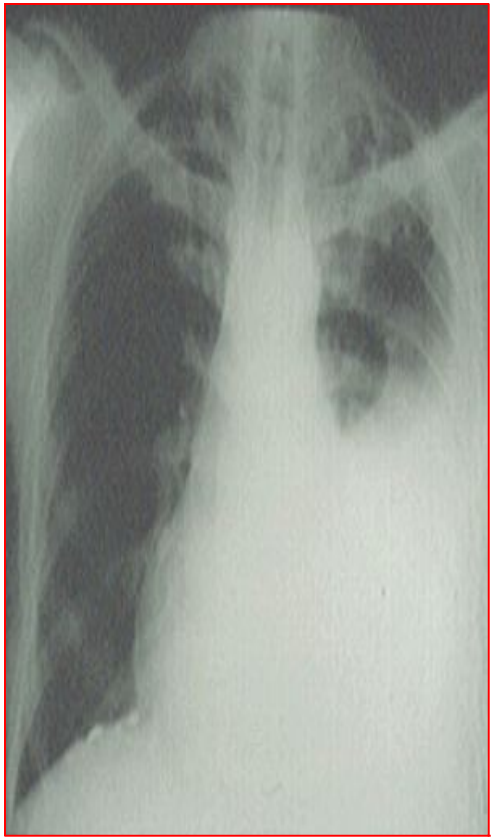
Health Effects

- Asbestosis
- Lung cancer
- Mesothelioma



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Asbestosis

- Lung disease caused by inhaling dust and fibers
- Scarring of the lung
- Thickening of lung tissue
- Decreased flexibility

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Asbestosis

- Shortness of breath
- Lung has decreased ability to oxygenate blood
- Clubbing of fingertips is a symptom
- Attributed to large dose, long term exposures

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Lung Cancer

- Cancer of lung tissue
- Dose-response
  - The more exposure the greater the risk
- No known “safe” level
- Smoking causes synergistic effect

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Smoking and Lung Cancer

- Non-smoker / non-asbestos worker 1 X
- Non-smoker / asbestos worker 5 X
- Smoker / non-asbestos worker 10 X
- Smoker / asbestos worker 75-90 X

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Mesothelioma

- Cancer of the mesothelial lining
- Asbestos only known cause (1965)
- Migration of fibers
- Rare form of cancer, no known cure

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Other Health Effects

- Gastro-intestinal
  - Stomach cancer
  - Colo-rectal cancer

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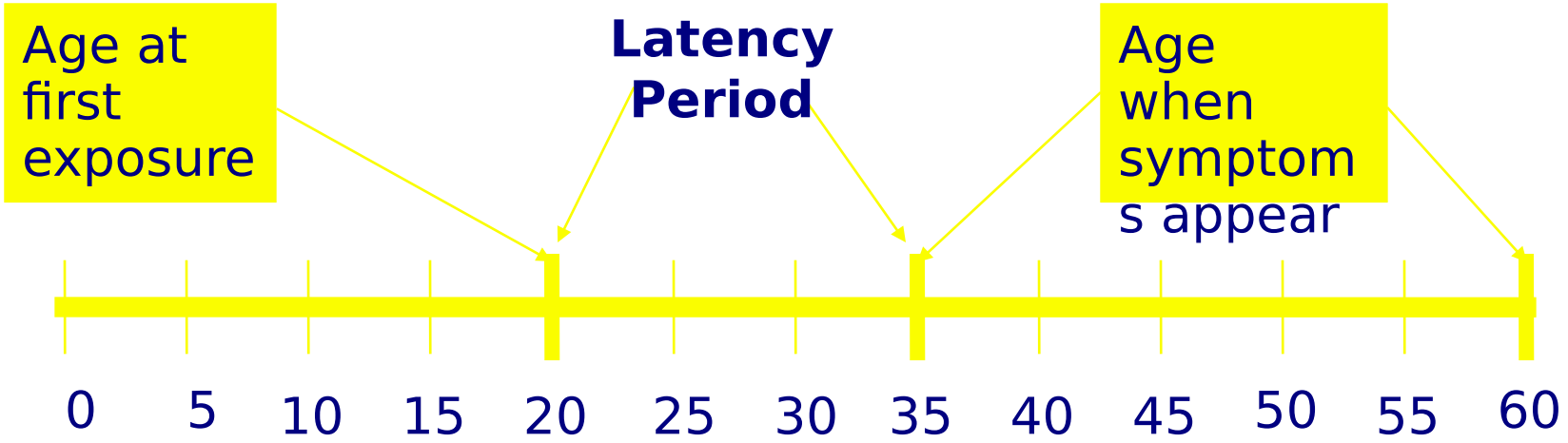
Latency Periods

- A “delayed reaction”



A workers age in years

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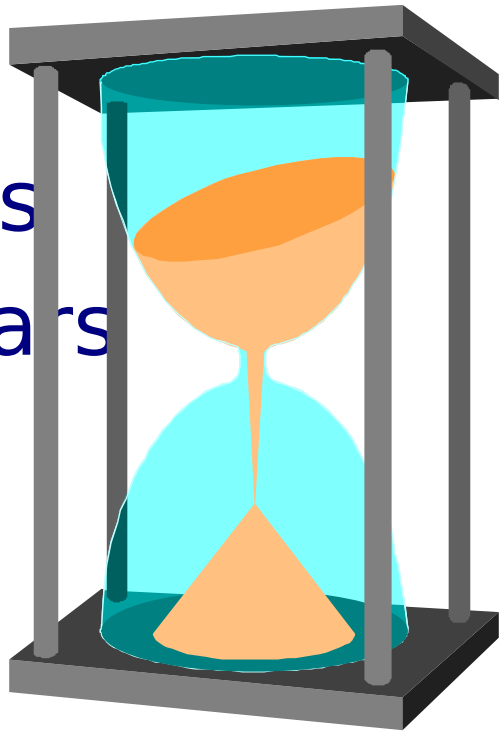
Latency Periods

- Gastro-intestinal: 10 - 20 years
- Asbestosis: 15 - 20 years
- Lung cancer: 20 - 30 years
- Mesothelioma: 30 - 40 years



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Determining factors Asbestos Related Diseases

- The amount and duration of exposure
- Whether or not you smoke
- Age

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PPE

- Respirator required
- Protective clothing
- Gloves
- Eye protection
- Head protection

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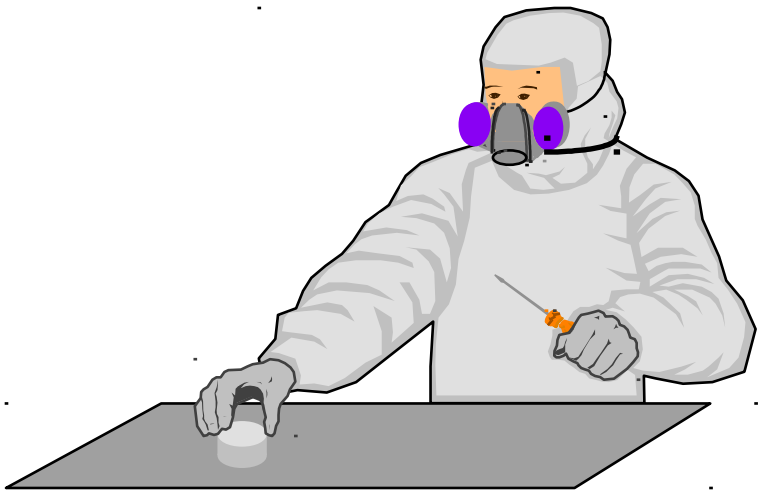
Work Practices

- Work divided into class:
  - I
  - II
  - III
  - IV



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Work Practices

- I is for removal of TSI and surfacing
- II is activities involving the removal of asbestos containing material which includes wallboard, floor tile and sheeting, roofing and siding shingles
- III is for operation & maintenance
- IV is maintenance and custodial activities

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Work Practices

- Wet removal
- Enclosure or isolation of work area
- Negative pressure in work area
- No cleaning with compressed air
- Remove materials intact
- HEPA filtered collection of dust

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Work Practices

- Use of glove bags
- Smoke test enclosures for leaks
- No dry sweeping, shoveling, or other dry clean-up of dusts or debris

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Work Practices

- No sanding or ripping up of flooring
- No cutting, abrading, or breaking of material

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Training

- Training in accordance with EPA Model Accreditation Plan or AHERA
  - Class I - worker or supervisor
  - Class II - worker or supervisor
  - Class III - 16 hour training minimum
  - Class IV - 2 hour minimum

EPA

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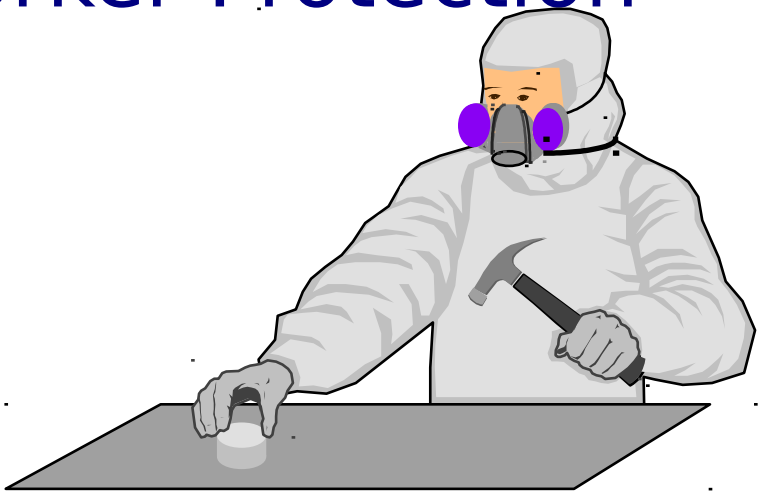
40 CFR - EPA

- Part 61 NESHAP
- Part 763 Sub E, AHERA
- Part 763 Sub G, Worker Protection



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Standards and Acts

- NESHAP – National Emission Standards for Hazardous Air Pollutants
- AHERA – Asbestos Hazard Emergency Response Act

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NESHAP

- No visible emissions when buildings are renovated or demolished
- Wet removal
- Proper disposal
- Waste generator label

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AHERA

- Asbestos in schools K-12th grade
- Inspections required
- Management plans required
- Designated individual
- Annual notifications
- Response actions

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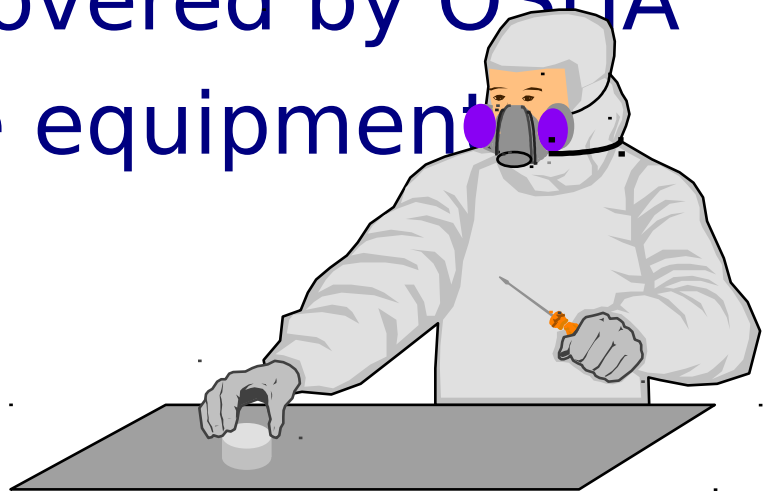
Worker Protection Rule

- EPA currently revising this rule
- Applies to state and local governments
- Covers those not covered by OSHA
- Personal protective equipment
- Record keeping
- Work practices



States

- Laws will vary
- Some may require the following:
  - AHERA / NESHAP enforcement
  - Licensing and registration
  - Regulatory compliance
  - Clearance procedures
  - Work practices
  - Training

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Review Material Classifications

- Surfacing
- Thermal system insulation
- Miscellaneous

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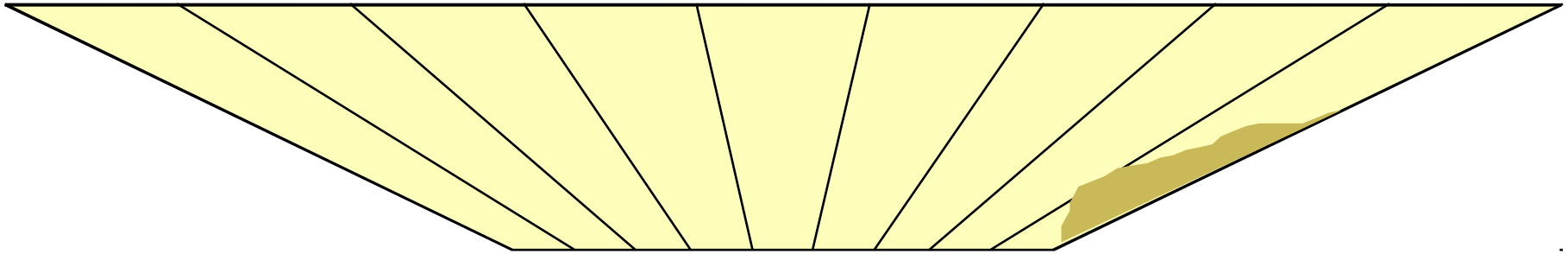
Surfacing Damage



- Delamination
- Water stains
- Degradation
- Gouges
- Flaking

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TSI Damage

- Loss of outer jacket
- Physical damage
- Water damage
- Degradation

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Miscellaneous Damage

- Breaking (transite)
- Shredding (fabrics)
- Abrading (floor tile)